

CLAIMS

The Listing of Claims replaces all prior versions of claims in the Subject Application.

1. (*Currently amended*) A nozzle for spraying a liquid into the atmosphere, comprising:

a secondary jet connected to means for supplying the liquid and including means for effecting a first fractionation of the liquid and an expansion chamber in which the liquid that has been submitted to the first fractionation is introduced;

a principal jet connected to means for generating a gaseous flow, including means for effecting a second fractionation of the liquid and an outlet orifice to the atmosphere in which fluid which has been submitted to the second fractionation is introduced; and

means for connecting the secondary jet to the principal jet, connecting the expansion chamber and the means for effecting the second fractionation of the liquid, and configured to create a mixed gas-and-liquid fluid,

wherein the secondary jet is in the form of a cylinder, the central portion of which is occupied by the principal jet, which also has a cylindrical figuration, the annular cross-sectional space created thereby forming the expansion chamber such that a wall defining a cylindrical conduit appertaining to the principal jet is at one and the same time a separating partition between the principal jet and the expansion chamber.

2. (*Canceled*)

3. (*Previously presented*) The spray nozzle according to claim 1, wherein the first and second fractional distillation means comprise a first and second Venturi respectively.

4. (*Previously presented*) The spray nozzle according to claim 3, wherein the first Venturi comprises a tapering part followed by a calibrated cylindrical portion

terminating in the expansion chamber.

5. (*Previously presented*) The spray nozzle according to claim 4, wherein the tapering part is in the form of a truncated cone, which is adapted to the calibrated cylindrical portion through an intermediary of a bearing so that a reduction in cross-section between the supply conduit and the calibrated cylindrical portion is discontinuous.

6. (*Previously Presented*) The spray nozzle according to claim 4, wherein the calibrated cylindrical portion terminates in the expansion chamber in a recessed manner relative to a wall of the expansion chamber.

7. (*Canceled*)

8. (*Currently amended*) The spray nozzle according to claim 7 3, wherein the means for connecting the secondary jet to the principal jet comprise a plurality of conduits disposed radially between the expansion chamber and the cylindrical portion of the second Venturi.

9. (*Previously presented*) The spray nozzle according to claim 1, wherein the expansion chamber has sudden variations in thickness along a longitudinal axis.

10. (*Previously presented*) The spray nozzle according to claim 8, wherein the expansion chamber has a smallest thickness in the vicinity of the plurality of conduits.

11. (*Previously presented*) The spray nozzle according to claim 1, further comprising means for effecting a third fractionation of the liquid.

12. (*Previously presented*) The spray nozzle according to claim 11, wherein the third fractionation means comprise an ultrasonic resonator and a resonance chamber connected to the outlet orifice in an axis of the principal jet.

13. (*Previously presented*) The spray nozzle according to claim 1, wherein the first fractionation means for the liquid comprise two first Venturi terminating in the expansion chamber.

14. (*Previously presented*) The spray nozzle according to claim 13, wherein the two first Venturi each comprise a tapering part followed by a calibrated cylindrical portion, the calibrated cylindrical portion having a different diameter for each the two first Venturi.

15. (*Currently amended*) An apparatus for spraying a liquid into the atmosphere, comprising:

means for supplying gas under pressure;

means for supplying liquid, the means including a reservoir containing the liquid, and an orifice;

a spray nozzle for spraying a liquid into the atmosphere, comprising a secondary jet connected to the orifice of the means for supplying the liquid, and including means for effecting a first fractionation of the liquid and an expansion chamber in which the liquid that has been submitted to the first fractionation is introduced; a principal jet connected to the means for supplying gas under pressure, including means for effecting a second fractionation of the liquid and an outlet orifice to the atmosphere in which fluid which has been submitted to the second fractionation is introduced; and means for connecting the secondary jet to the principal jet, by connecting the expansion chamber and the means for effecting the second fractionation of the liquid, and configured to create a mixed gas-and-liquid fluid; and means for checking and regulating fluids in the apparatus,

wherein the secondary jet is in the form of a cylinder, the central portion of which is occupied by the principal jet, which also has a cylindrical figuration, the annular cross-sectional space created thereby forming the expansion chamber such that a wall defining a cylindrical conduit appertaining to the principal jet is at one and the same time a separating partition between the principal jet and the expansion chamber.

16. (*Canceled*)

17. (*Currently amended*) A method of spraying a liquid into the atmosphere, the method comprising steps of:

effecting a first fractionation of the liquid through a secondary jet by suction through a conduit, which has a first Venturi terminating in an expansion chamber which is subjected to a negative pressure; and

effecting a second fractionation of the liquid from the first fractionation through a principal jet by suction through means for connecting the expansion chamber to a second Venturi which is supplied by a gas under pressure,

wherein the liquid from the first fractionation is mixed with the gas creating therefore a mixed gas-and-liquid and which terminates in a low pressure area of an outlet orifice,

and wherein the secondary jet is in the form of a cylinder, the central portion of which is occupied by the principal jet, which also has a cylindrical figuration, the annular cross-sectional space created thereby forming the expansion chamber such that a wall defining a cylindrical conduit appertaining to the principal jet is at one and the same time a separating partition between the principal jet and the expansion chamber.

18. (*Previously presented*) The method according to claim 17, wherein a gas supply pressure of the second Venturi is regulated so that a pressure prevailing at an outlet of the second Venturi is lower than a pressure prevailing in the expansion chamber.

19. (*Previously presented*) The method of spraying according to claim 18, wherein the first and second fractionations are effected by means of a spray nozzle, and a pressure of the gaseous flow in a principal jet of the spray nozzle is between 2.5 bars and 3.5 bars, and

a diameter of a calibrated cylindrical portion of the first Venturi is between 0.3 mm and 1 mm, permitting a delivery of liquid of between 15 ml/min and 40 ml/min.

20. (*Previously presented*) The method of spraying according to claim 17, further comprising a step of effecting a third fractionation of the liquid by ultrasonic resonance.

21. (*Previously presented*) The spray nozzle according to claim 1, configured for disinfecting premises used for medical, paramedical or food-processing purposes.

22. (*Currently amended*) The spray nozzle according to claim 7 ~~3~~, wherein the means for connecting the secondary jet to the principal jet comprise one conduit disposed between the expansion chamber and the cylindrical portion of the second Venturi.

23. (*Currently amended*) A nozzle for spraying a liquid into the atmosphere in the form of a gas-and-liquid fluid, comprising:

a secondary jet connected to a reservoir configured to supply the liquid, the secondary jet comprising a first Venturi configured to fractionate the liquid into a first fractionation stream and an expansion chamber in fluid communication with the first Venturi and configured to receive the first fractionation stream;

a principal jet connected to a source of gas under pressure, the principal jet comprising a second Venturi configured to fractionate the first fractionation stream into a second fractionation stream and an outlet orifice to the atmosphere; and

the secondary jet in fluid communication with the principal jet, and in fluid communication with the expansion chamber and the second Venturi such that the liquid is sprayed into the atmosphere in the form of the gas-and-liquid fluid,

wherein the secondary jet is in the form of a cylinder, the central portion of which is occupied by the principal jet, which also has a cylindrical figuration, the annular cross-sectional space created thereby forming the expansion chamber such that a wall defining a cylindrical conduit appertaining to the principal jet is at one and the same time a separating partition between the principal jet and the expansion chamber.

24. (*Previously presented*) An apparatus for spraying a liquid into the atmosphere, comprising the nozzle of claim 23.